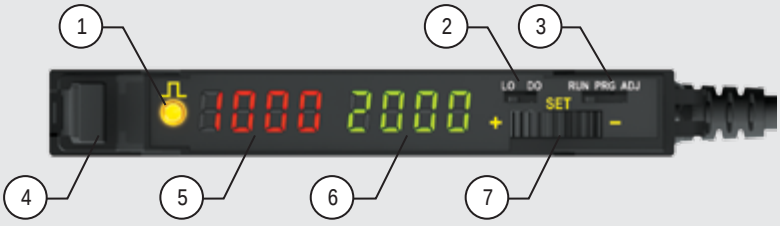
SENSORS

Expert Dual Display Fiber Amplifier
DF-G1 Series

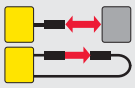
- Easy-to-read dual digital displays show both signal level and threshold simultaneously
- Lever action fiber clamp provides stable, reliable and trouble-free fiber clamping
- Simple user interface ensures easy sensor set-up and programming via displays and switches/buttons, remote input teach wire or IO-Link
- Expert TEACH and SET methods ensure optimal gain and threshold for all applications, especially low contrast applications
- User has full control over all operating parameters: threshold, Light or Dark Operate, output timing functions, gain level, and response speed
- Thermally stable electronics minimize warm-up drift and the effect of side-by-side mounting of multiple fiber amplifiers
- ECO (economy) display mode reduces amplifier power consumption by 25%
- Cross talk avoidance algorithm allows two sensors to operate in close proximity for many applications
- Response speeds of: 200 µs (High Speed), 500 µs (Standard Speed), 2 ms (Long Range), and 5 ms (Extra Long Range) allow operator to optimize for fast or long distance applications
- Sleek 10 mm wide housing mounts to standard 35 mm DIN rail
- Visible red LED sensing beam for easy alignment to the target

ACCESSORIES PAGE 239
PLASTIC FIBERS PAGE 258
PLASTIC FIBER
GLASS FIBER

1	Output LED
2	LO/DO Switch
3	RUN/PRG/ADJ Mode Switch
4	Lever Action Fiber Clamp
5	Red Signal Level
6	Green Threshold
7	+/Set/- Rocker Button



DF-G1, 10-30V dc

Sensing Mode/LED	Connection	Range	Output	Model
 PLASTIC FIBER	2 m	Range varies by Speed Selection used and with fiber optics used. See fibers section on page 259 or reference website for range information.	NPN	DF-G1-NS-2M
			PNP	DF-G1-PS-2M
	Integral M8 Pico connector		NPN	DF-G1-NS-Q7
			PNP	DF-G1-PS-Q7
	150mm PVC pigtail, M12 Euro connector		IO-Link	DF-G1-KS-Q5

Connection options: A model with a QD requires a mating cordset (see page 239).

For 9 m cable, change the suffix 2M to 9M in the 2 m model number (example, DF-G1-NS-9M).

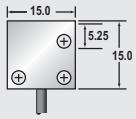
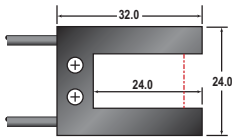
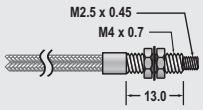
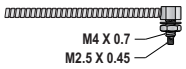
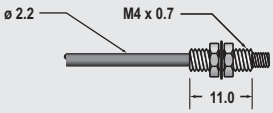
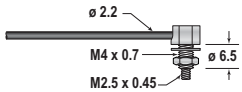
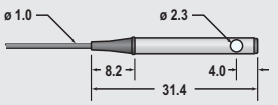
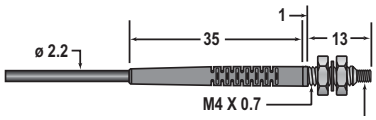
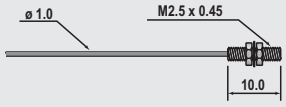
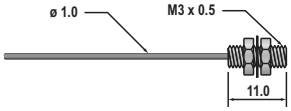
For M8 Pico pigtail change the suffix 2M to Q3 in the 2 m model number (example, DF-G1-NS-Q3).
For M12 Euro pigtail change the suffix 2M to Q5 in the 2 m model number (example, DF-G1-NS-Q5).

DF-G1 Specifications

Supply Voltage and Current	10 to 30V dc (10% max ripple) @ less than 100 mA exclusive of load Standard Mode: 960 mW, Current consumption < 40 mA @ 24V dc ECO Mode: 720 mW, Current consumption < 30 mA @ 24V dc
Supply Protection Circuitry	Protected against reverse polarity, over voltage, and transient voltages
Output Configuration	1 current sourcing (PNP) or 1 current sinking (NPN) output, depending on model
Output Rating	100 mA max. load (derate 1 mA per °C above 30° C) OFF-state leakage current: < 5 µA at 30V dc ON-state saturation voltage: NPN: < 1.5V; PNP: < 2V
Output Protection Circuitry	Protected against output short-circuit, continuous overload, transient over-voltages, and false pulse on power up
Output Response Time	High Speed: 200 us Standard: 500 us Long Range: 2 ms Extra Long Range: 5 ms
Delay at Power-up	500 milliseconds max.; outputs do not conduct during this time
Adjustments	3-way RUN/PRG/ADJ Mode Switch 2-way LO/DO Switch 3-way +/SET/- Rocker Button See datasheet for detailed information.
Indicators	Red 4-digit Display: Signal Level Green 4-digit Display: Threshold (In Program Mode, Red and Green displays are used for programming menus) Yellow LED: Output conducting
Construction	Black ABS/polycarbonate alloy (UL94 V-0 rated) housing, clear polycarbonate cover
Environmental Rating	IEC IP50, NEMA 1
Connections	PVC-jacketed 2 or 9 m 4-wire integral cable, integral 4-pin Pico-style QD, Pico-style QD or Euro QD. See page 239.
Operating Conditions	Temperature: -10° to +55° C Storage: -20° to +85° C Relative Humidity: 95% @ 60° C (non-condensing)
Certifications	CE
Hookup Diagrams	DC07 (p. 789)

ACCESSORIES PAGE 239

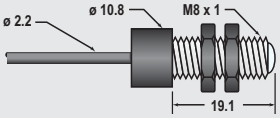
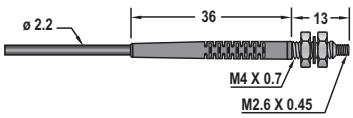
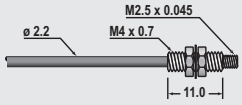
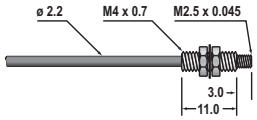
DF-G1 Range with Selected Opposed Plastic Fiber Optics (See page 258 for other fibers)

Fiber Mode	End Tip (mm)	Features	Typical Range (mm)	Model
Array OPPOSED		• 16X 0.265 mm core diameter • 25 mm bend radius • Ultra-compact head; side exit; 5.25 mm width	Standard or High Speed: 240 Long Range: 490 Extra Long Range: 640	PIRS1X166U
Slot OPPOSED		• 1.0 mm core diameter • 25 mm bend radius • Easy mount “fork” head; DURA-BEND fiber	Standard or High Speed: 12 Long Range: 12 Extra Long Range: 12	PDIS46UM12
SteelSkin™ OPPOSED		• 1.0 mm core diameter • 12 mm bend radius • Threaded • Stainless steel	Standard or High Speed: 280 Long Range: 580 Extra Long Range: 740	PIT43TMB5
		• 1.0 mm core diameter • 12 mm bend radius • Threaded right angle • Stainless steel	Standard or High Speed: 280 Long Range: 580 Extra Long Range: 470	PIAT43TMB5MTA
High-Flex OPPOSED		• 1.0 mm core diameter • 1.0 mm bend radius • Threaded • Lens models available	Standard or High Speed: 170 Long Range: 340 Extra Long Range: 440	PIT46UHF
		• 1.0 mm core diameter • 2 mm bend radius • Right angle; threaded • Lens models available	Standard or High Speed: 190 Long Range: 390 Extra Long Range: 490	PIAT46UHFMTA
Standard OPPOSED		• 0.5 mm core diameter • 12 mm bend radius • Low beam divergence angle of 2° • Ideal for wafer mapping	Standard or High Speed: 860 Long Range: 1690 Extra Long Range: 2090	PLIS-1
		• 0.5 mm core diameter • 12 mm bend radius • Threaded • Overmold flex relief	Standard or High Speed: 60 Long Range: 170 Extra Long Range: 220	PIT26UMFR
		• 0.25 mm core diameter • 8 mm bend radius • Threaded	Standard or High Speed: 20 Long Range: 47 Extra Long Range: 58	PIT16U
		• 0.5 mm core diameter • 12 mm bend radius • Threaded	Standard or High Speed: 60 Long Range: 170 Extra Long Range: 220	PIT26U

More on next page

Indicates lens available for model. See page 278 for details.

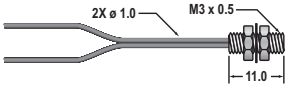
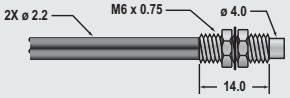
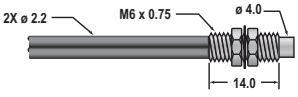
DF-G1 Range with Selected Opposed Plastic Fiber Optics (See page 258 for other fibers)

Fiber Mode	End Tip (mm)	Features	Typical Range (mm)	Model
Standard OPPOSED		• 1.0 mm core diameter • 25 mm bend radius • Plastic lens; ultra-long range	Standard or High Speed: 2000 Long Range: 3000 Extra Long Range: 4000	PIL46U
		• 1.0 mm core diameter • 25 mm bend radius • Lens models available • Threaded	Standard or High Speed: 300 Long Range: 640 Extra Long Range: 840	PIT46UMFR
		• 1.0 mm core diameter • 25 mm bend radius • Lens models available • Threaded	Standard or High Speed: 300 Long Range: 630 Extra Long Range: 820	PIT46U
		• 1.5 mm core diameter • 38 mm bend radius • Lens models available • Threaded	Standard or High Speed: 400 Long Range: 1130 Extra Long Range: 1320	PIT66U

Photoelectrics Sensors
Fiber Optic Sensors
Measurement & Inspection Sensors
Special Purpose Sensors
Vision
Lighting & Indicators
Wireless
Safety Light Screens
Safety Laser Scanners
Safety Controllers & Modules
Safety Two-Hand Control Modules
Safety Interlock Switches
Emergency Stop & Stop Control
ACCESSORIES PAGE 239

FIBER SENSORS
DF-G1
D10
D12
R55F
PLASTIC FIBERS
GLASS FIBERS

DF-G1 Range with Selected Diffuse Plastic Fiber Optics (See page 258 for other fibers)

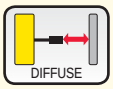
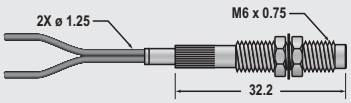
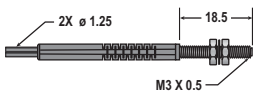
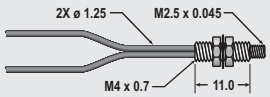
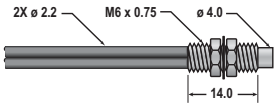
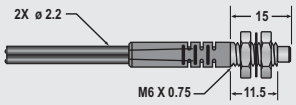
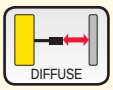
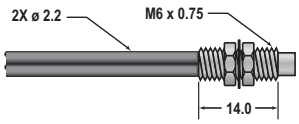
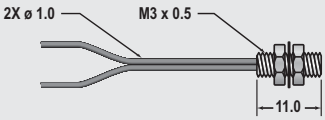
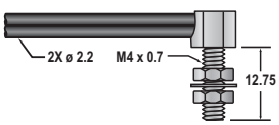
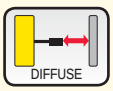
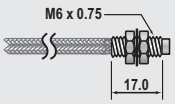
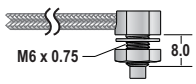
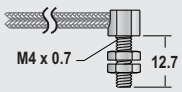
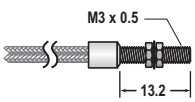
Fiber Mode	End Tip (mm)	Features	Typical Range (mm)	Model
Standard DIFFUSE		• 0.25 mm core diameter • 8 mm bend radius • Thread	Standard or High Speed: 5 Long Range: 10 Extra Long Range: 12	PBT16U
		• 0.5 mm core diameter • 12 mm bend radius • Thread	Standard or High Speed: 20 Long Range: 70 Extra Long Range: 80	PBT26U
		• 1.0 mm core diameter • 25 mm bend radius • Thread	Standard or High Speed: 100 Long Range: 190 Extra Long Range: 220	PBT46U
		• 1.5 mm core diameter • 38 mm bend radius • Thread; long range	Standard or High Speed: 160 Long Range: 270 Extra Long Range: 310	PBT66U

More on next page

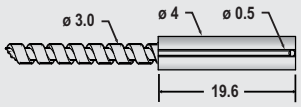
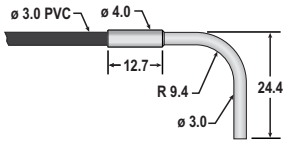
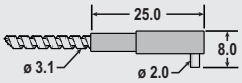
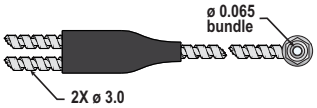
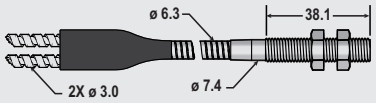
Indicates lens available for model. See page 278 for details.

ACCESSORIES PAGE 239

DF-G1 Range with Selected Diffuse Plastic Fiber Optics (See page 258 for other fibers)

Fiber Mode	End Tip (mm)	Features	Typical Range (mm)	Model
Coaxial 		• 0.5 (9X 0.25) mm core diameter • 12 mm bend radius • Anodized AL tip; ø 0.5-3.2 mm beam spot • Glass lens	Standard or High Speed: 50 Long Range: 50 Extra Long Range: 50	PLI-A10
		• 0.5 (10X 0.25) mm core diameter • 12 mm bend radius • Thread • Overmolded flex relief	Standard or High Speed: 42 Long Range: 75 Extra Long Range: 80	PBCT26UMFR
		• 0.5 (9X 0.25) mm core diameter • 12 mm bend radius • Thread	Standard or High Speed: 44 Long Range: 80 Extra Long Range: 90	PBCT26UM4M2.5
		• 1.0 (16X 0.265) mm core diameter • 25 mm bend radius • Thread	Standard or High Speed: 100 Long Range: 190 Extra Long Range: 220	PBCT46U
		• 1.0 (16X 0.265) mm core diameter • 25 mm bend radius • Thread • Overmolded flex relief	Standard or High Speed: 100 Long Range: 110 Extra Long Range: 230	PBCT46UMFR
High Flex 		• 1.0 mm core diameter • 1.0 mm bend radius • Thread	Standard or High Speed: 65 Long Range: 120 Extra Long Range: 140	PBT46UHF
		• 0.5 mm core diameter • 1.0 mm bend radius • Thread	Standard or High Speed: 20 Long Range: 35 Extra Long Range: 40	PBT26UHF
		• 1.0 mm core diameter • 2.0 mm bend radius • Threaded right angle • Stainless Steel	Standard or High Speed: 60 Long Range: 100 Extra Long Range: 120	PBAT46UHFMTA
SteelSkin™ 		• 1.0 mm core diameter • 12 mm bend radius • Threaded • Stainless Steel	Standard or High Speed: 80 Long Range: 180 Extra Long Range: 230	PBT43TMB5
		• 1.0 mm core diameter • 12 mm bend radius • Threaded right angle • Stainless Steel	Standard or High Speed: 70 Long Range: 160 Extra Long Range: 210	PBAT43TMB5MTA
		• 0.5 & 9X 0.25 mm core diameter • 12 mm bend radius • Threaded right angle • Stainless Steel • Coaxial	Standard or High Speed: 30 Long Range: 60 Extra Long Range: 80	PBCT23TMB5MTA
		• 0.5 & 9X 0.25 mm core diameter • 12 mm bend radius • Threaded • Stainless Steel • Coaxial	Standard or High Speed: 40 Long Range: 80 Extra Long Range: 110	PBCT23TMB5

DF-G1 Range with Selected Glass Fiber Optics (See page 258 for other fibers)

Fiber Mode	End Tip (mm)	Features	Typical Range (mm)	Model
Standard OPPOSED		• 0.9 mm core diameter • 12 mm bend radius • Smooth ferrule • Side exit • Stainless steel	Standard or High Speed: 65 Long Range: 130 Extra Long Range: 170	IA.31.7ST5ETA
		• 1.3 mm core diameter • 16 mm bend radius • Smooth ferrule • 90° angle • Stainless steel	Standard or High Speed: 290 Long Range: 620 Extra Long Range: 810	IA.82.5PT5
		• 1.3 mm core diameter • 12 mm bend radius • Smooth ferrule • Side exit • Stainless steel	Standard or High Speed: 300 Long Range: 640 Extra Long Range: 810	IA.83.3ST5ETA
Standard DIFFUSE		• 1.7 mm core diameter • 12 mm bend radius • Threaded right angle • Stainless steel	Standard or High Speed: 110 Long Range: 230 Extra Long Range: 270	BAT16.6ST5MTA
		• 1.5 mm core diameter • 19 mm bend radius • Threaded • Stainless steel	Standard or High Speed: 100 Long Range: 200 Extra Long Range: 240	BT13.5ST5

Cordsets

Pico QD

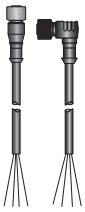
See page 723

Length	Threaded 4-Pin	
	Straight	Right-Angle
2.00 m	PKG4M-2	PKW4M-2
5.00 m	PKG4M-5	PKW4M-5
9.00 m	PKG4M-9	PKW4M-9

Euro QD

See page 724

Length	Threaded 4-Pin	
	Straight	Right-Angle
1.83 m	MQDC-406	MQDC-406RA
4.57 m	MQDC-415	MQDC-415RA
9.14 m	MQDC-430	MQDC-430RA



Additional cordset information available. See page 721.

Brackets

DF-G1

pg. 666

DIN-35..

pg. 673

SA-DIN-BRACKET

Additional bracket information available. See page 656.

Clamps

DF-G1

SA-DIN-CLAMP